

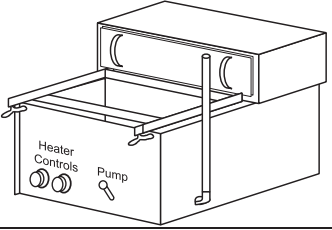
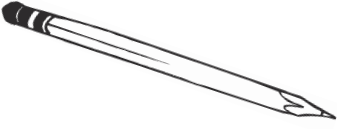
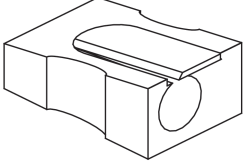
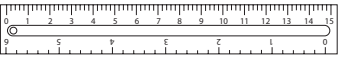
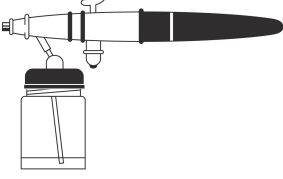
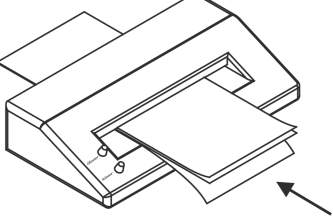
Answer ALL the questions. Write your answers in the spaces provided.

1. The table below shows some tools and equipment.

(a) Complete the table by:

- (i) naming each tool or item of equipment
- (ii) describing its use

The first one has been done for you.

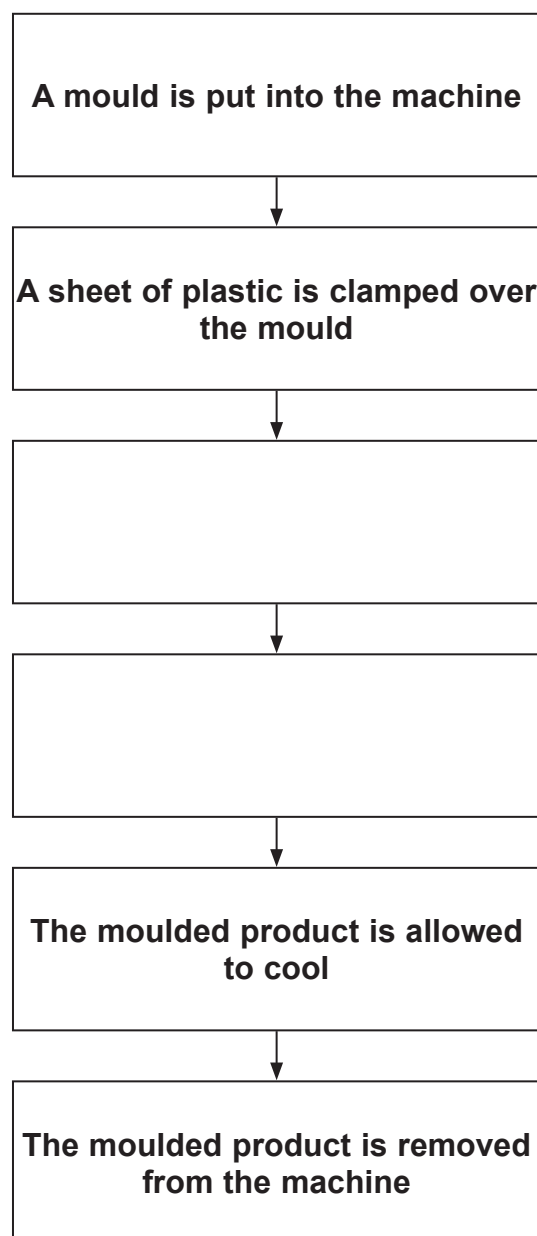
Tool/Equipment	Name	Use
	Vacuum former	Forming sheets of plastic over moulds
		
		
		
		
		

(10)



(b) The vacuum former is used to shape sheets of plastic using moulds. The chart below shows some of the stages in producing a moulded product. Two stages are missing.

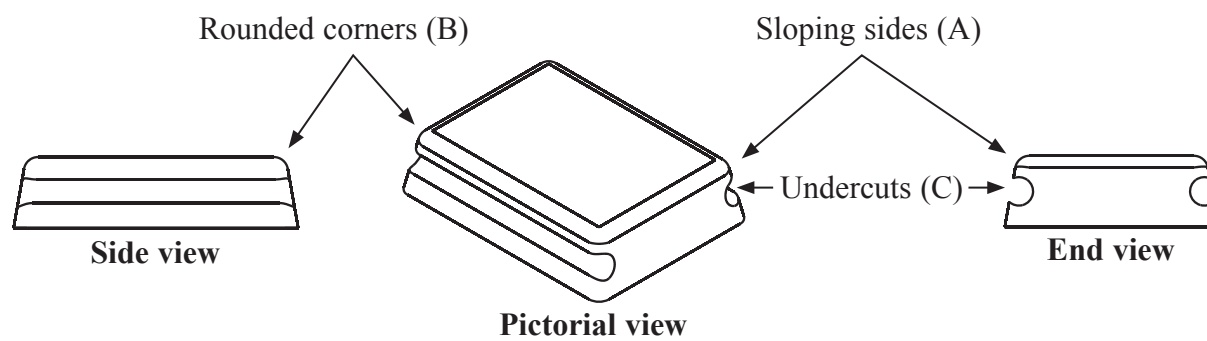
Fill in the **two** missing stages.



(2)



(c) The drawings below show a prototype mould used for vacuum forming.



(i) State **one** reason why the mould has been designed with the sloping sides (A).
.....
(1)

(ii) State **one** reason why the mould has been designed with the rounded corners (B).
.....
(1)

(iii) State **one** problem that would be caused by the undercuts (C).
.....
(1)

(d) CAD can be used during the design of vacuum forming moulds.

Give **two** ways in which CAD makes designing faster.

- 1
 - 2
- (2)

(e) The manufacturer of the moulded product uses email to communicate with customers.

Give **two** advantages to the manufacturer of using email for communication.

- 1
 - 2
- (2)



Leave
blank

(f) The manufacturer uses a computer database to store data about the moulded product. The length and height of the moulded product are two pieces of data stored.

Name **three** other pieces of data about the moulded product that might be stored on a database.

1

2

3

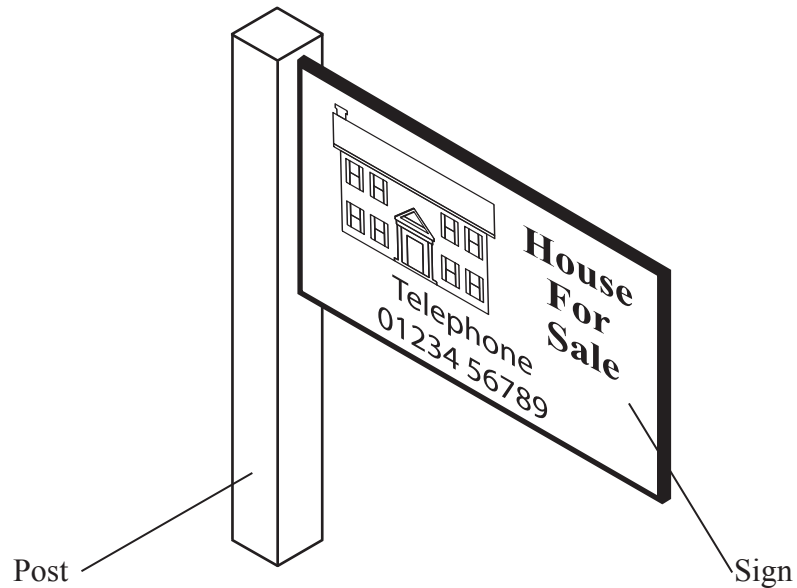
(3)

Q1

(Total 22 marks)



2. The drawing below shows an estate agent's "For Sale" sign on a post. The sign is placed outside a house. The sign is made from corrugated polypropylene (corriflute).



- (a) One functional property of corrugated polypropylene is that it is durable.

(i) State the meaning of the term **durable**.

..... (1)

(ii) Give **two** more functional properties that make corrugated polypropylene suitable for the estate agent's sign.

Do **not** include cost.

1

2

(2)

(iii) MDF could be used to make the sign.

Give **one** disadvantage of making the sign from MDF.

..... (1)

- (b) The corrugated polypropylene is yellow. The graphics of the sign are printed in black.

Give **one** aesthetic reason for using the colour yellow for the sign.

..... (1)



(c) (i) The designer used a drawing board when designing the graphics for the sign.

Explain **one** reason why a designer would use a drawing board.

.....
.....
(2)

(ii) The designer used a photocopier during the design process.

Explain **one** reason why a designer would use a photocopier during the design process.

.....
.....
(2)

(iii) The designer used spirit-based marker pens when drawing.

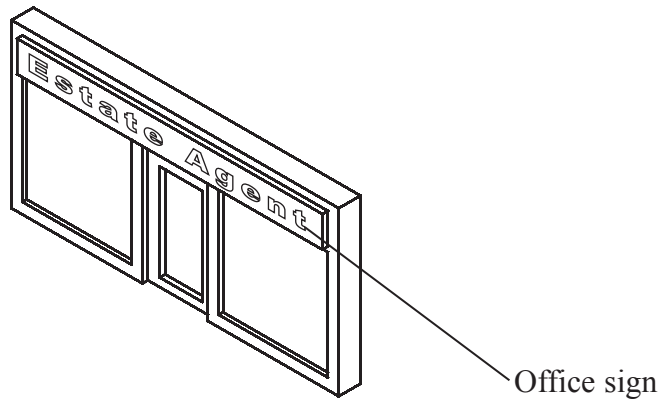
Give **two** advantages of using spirit-based marker pens compared to water-based marker pens.

1

2

(2)

(d) The drawing below shows the front of the estate agent's office.



(i) There are lights inside the office sign.

Give **two** reasons why it is important that the lights inside the sign are reliable.

1

2

(2)



Leave
blank

(ii) The office sign is tested to ensure it meets British Standards Institute (BSI) requirements.

Give **two** advantages for the consumer of products being tested to BSI requirements.

1

2

(2)

(e) The estate agent changes the design of the office sign every year to stay in fashion.

Give **two** disadvantages for society of replacing products to stay in fashion.

1

2

(2)

(f) The estate agent uses an internet site instead of local newspapers to advertise houses it has for sale.

Give **three** advantages for customers of adverts being on an internet site instead of in a newspaper.

1

2

3

(3)

(g) Products are often packaged in PVC for protection during transport. The manufacture of PVC may produce waste hydrochloric acid.

Explain **one** disadvantage for the environment of producing waste hydrochloric acid.

.....

.....

(2)

Q2

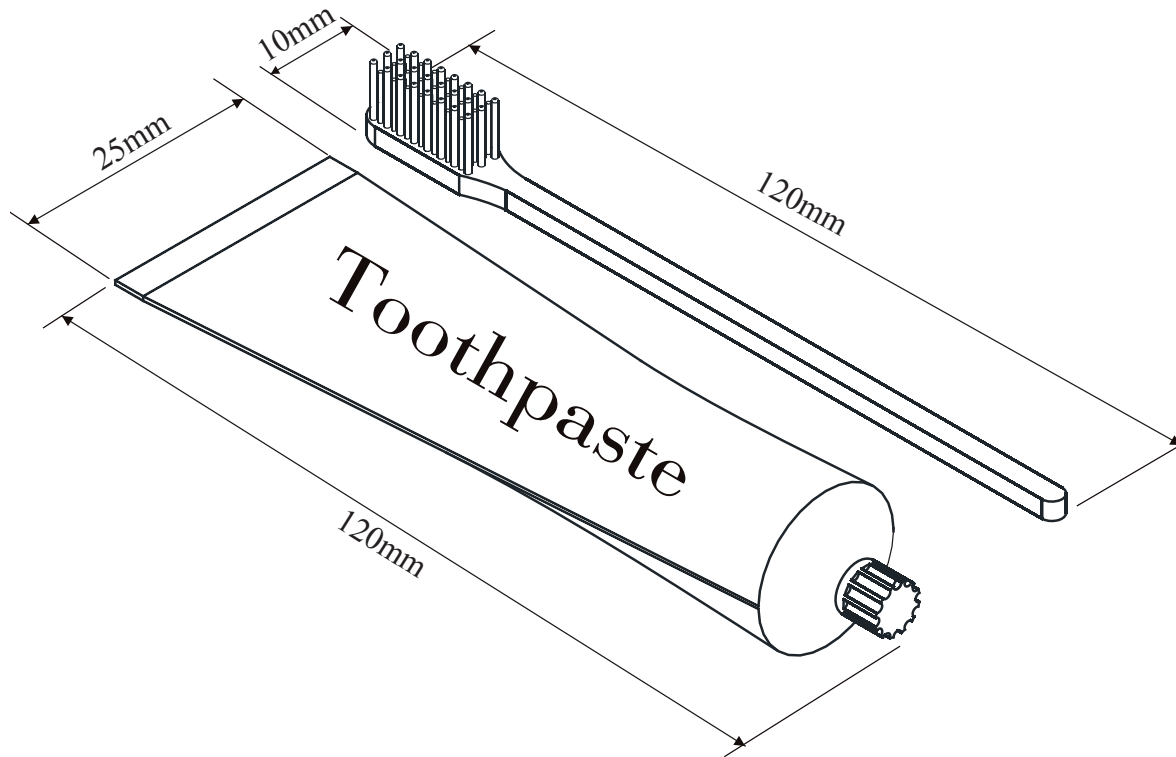
(Total 22 marks)



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3. The drawing below shows a toothbrush and a tube of toothpaste.



A prototype package to hold the toothbrush and toothpaste is required.

The specification for the package is that it must:

- allow customers to see the toothbrush and toothpaste inside the package
- have a seal that shows if the package has been opened
- have a space to clearly display graphics to promote the product
- be made using materials and processes suitable for one-off production

(a) In the spaces opposite, use sketches and, where necessary, brief notes to show **two different** design ideas for the package that meet this specification.

Do **not** evaluate your designs in part (a).

Candidates are reminded that if pencil is used for diagrams/sketches that it must be dark (HB or B). Coloured pens, pencils and highlighter pens must **not** be used.

Please do not write in the space below. Please write in the spaces provided opposite.



Design Idea 1

Leave
blank

(8)

Design Idea 2

(8)



Leave
blank

(b) Three of the original specification points are repeated below.

Evaluate how **one** of your design ideas succeeds or fails to meet each of these specification points.

Write the number of your chosen design idea (1 or 2) here

(i) The prototype package must allow customers to see the toothbrush and toothpaste inside the package.

.....
.....
.....
.....

(2)

(ii) The prototype package must have a seal that shows if the package has been opened.

.....
.....
.....
.....

(2)

(iii) The prototype package must be made using materials and processes suitable for one-off production.

.....
.....
.....
.....

(2)

(Total 22 marks)

Q3

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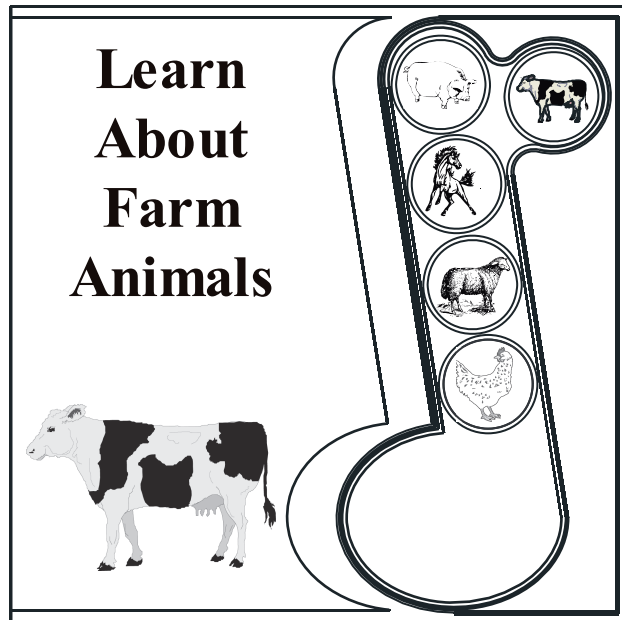


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4. The drawings below show a child's book that plays sounds when the buttons on the side are pushed. The book is aimed at children aged between two and four.

Battery cover made from a red material

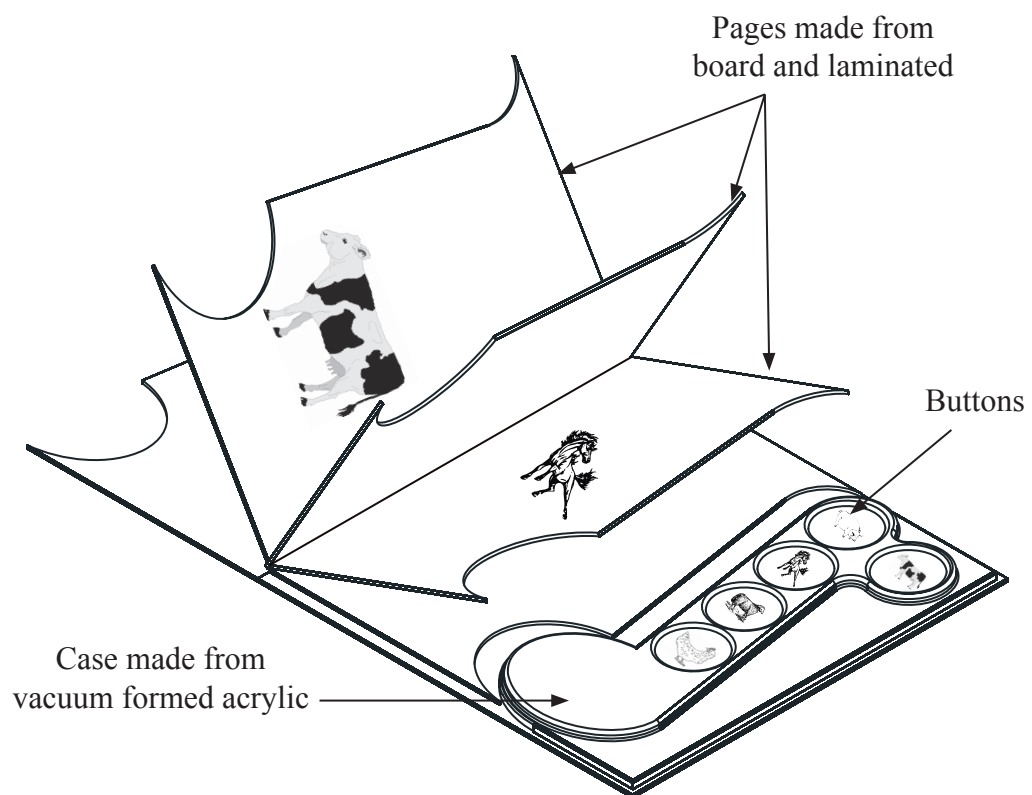


Front cover of book in full colour



Back cover of book in full colour

Barcode



Open pages of book



Leave
blank

(a) Two specification points for the book are that:

- the covers must attract the attention of potential purchasers
- the covers must allow the retailer to monitor sales easily

Under each of the following headings, give **one** more point that should be included in the specification for this book.

For each point give **one** reason why it should be included.

Market

Point

Reason

.....
.....

Environment

Point

Reason

.....
.....

Quality

Point

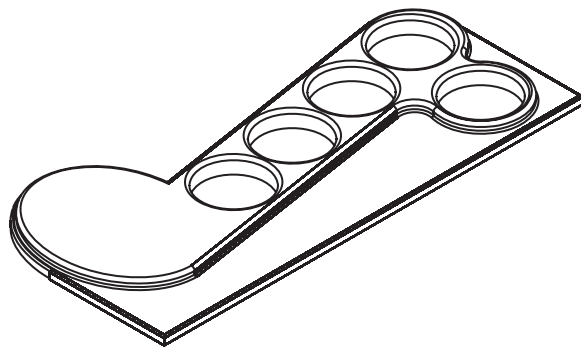
Reason

.....
.....

(6)



(b) The drawing below shows the case that surrounds the buttons. It is made from acrylic.



(i) One reason why the case is made from acrylic is that it can be vacuum formed to the required shape.

Give **two** other reasons why acrylic is a suitable material from which to make the case.

1

2

(2)

(ii) One reason why the case is vacuum formed is that it is cost effective.

Give **two** other reasons why the acrylic case is made by vacuum forming.

1

2

(2)

(c) The pages of the book are made from solid board.

Give **two** properties of solid board that make it suitable for the pages of the book. For each property, give **one** reason why it makes solid board suitable for the pages of the book.

Property 1

Reason

.....

Property 2

Reason

.....

(4)



Leave
blank

(d) The battery cover is made from a red material.

Explain **one** reason why the battery cover is made from a red material.

.....
.....
(2)

(e) The pages of the book are finished using laminating.

Explain **one** reason why laminating is used for finishing the pages.

.....
.....
(2)

(f) Two purposes of the covers of the book are:

- to attract the attention of potential purchasers
- to allow the retailer to easily monitor sales of the book

Explain under the following headings, how the covers of the book achieve these purposes.

(i) Attract the attention of potential purchasers.

.....
.....
.....
.....
(2)

(ii) Allow the retailer to easily monitor sales of the book.

.....
.....
.....
.....
(2)

Q4

(Total 22 marks)

TOTAL FOR PAPER: 88 MARKS

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